

# APPENDIX D: PARK & RIDE REPORT



**FINAL REPORT**

# **STATEWIDE STRATEGIC TRANSIT PLAN: PARK-AND-RIDE FACILITIES**

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55 Railroad Row  
White River Junction, VT 05001  
802.295.4999  
[www.rsginc.com](http://www.rsginc.com)

**PREPARED FOR:**  
NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

**SUBMITTED BY:**  
RSG

**IN COOPERATION WITH:**  
STEADMAN HILL CONSULTING



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## 1.0 INTRODUCTION

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This report documents an assessment of the state of the New Hampshire Department of Transportation (NH DOT) Park-and-Ride facilities and guides future investment in them. This report examines current demand, identifies any deficiencies, and projects future needs. It examines over-utilized lots and areas of unmet demand and suggests a method to prioritize investments in them based on specific, objective criteria identified from the literature.

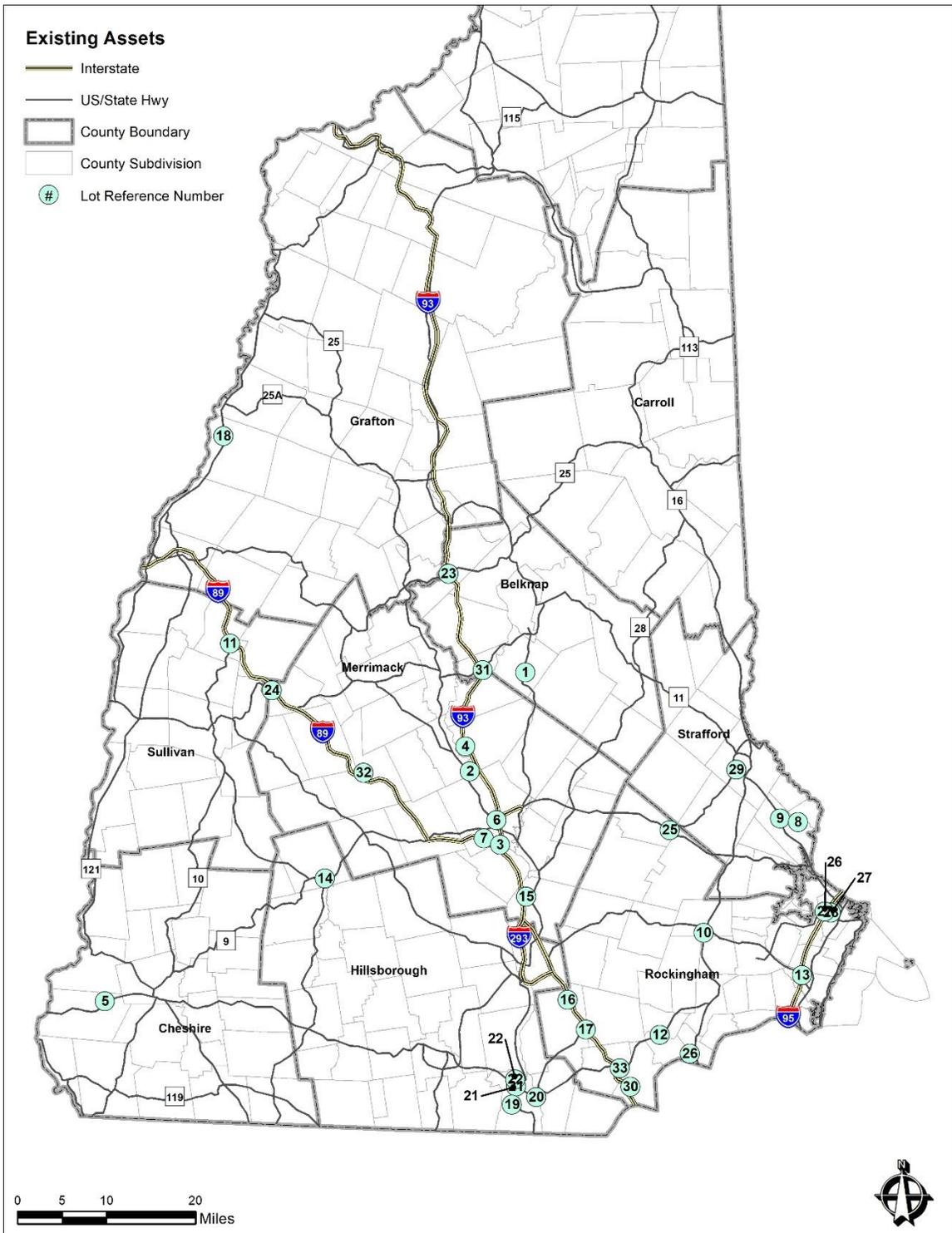
## 2.0 INVENTORY OF PARK-AND-RIDE FACILITIES

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The inventory of park-and-ride facilities is focused in two areas – amenities and capacity. Amenities make the park-and-ride experience safer and more comfortable, and they encourage the public to use park-and-ride lots. Capacity focuses on the demand and availability for park-and-ride spaces throughout the state.

The inventory includes details on thirty-three lots in the New Hampshire Park-and-Ride system. They are illustrated in Figure 1. Table 1 follows and outlines key features of each. As illustrated in Figure 1, the existing facilities are generally along major highways – often interstates or turnpikes, and most of the facilities are in the southern third of the state. As will be discussed below, these locations correspond with best practices given their proximity to major roads and their coverage of most areas with high population density. The following sections will review what amenities are provided in each location, and any gaps in capacity in the system. The capacity review will examine areas of unmet demand and where demand outstrips capacity.

FIGURE 1: REFERENCE MAP FOR NHDOT PARK-AND-RIDE FACILITIES





**TABLE 1: INVENTORY FOR NEW HAMPSHIRE PARK-AND-RIDE FACILITIES**

ID	Municipality	Ownership	Bus Shelter	Bike Racks	Local Transit	Intercity Transit	Spaces	Utilization	ADA Compliant?
1	Belmont	Town of Belmont					42	52%	not available
2	Boscawen	NHDOT					42	50%	
3	Bow	NHDOT					60	95%	
4	Canterbury	NHDOT					10	70%	
5	Chesterfield	NHDOT					45	16%	
6	Concord (Clinton St.)	NHDOT					100	86%	
7	Concord (Stickney Ave.)	NHDOT					580	81%	
8	Dover (Ice Arena)	City of Dover					230	43%	not available
9	Dover (Rt. 16)	NHDOT					414	93%	
10	Epping	NHDOT					246	23%	
11	Grantham	NHDOT					53	21%	
12	Hampstead	NHDOT					104	3%	
13	Hampton	NHDOT					104	59%	
14	Hillsborough	NHDOT					106	9%	
15	Hooksett	NHDOT					45	51%	
16	Londonderry (north)	NHDOT					728	67%	
17	Londonderry (south)	NHDOT					452	29%	
18	Lyme	NHDOT					10	60%	
19	Nashua 5W	City of Nashua					10	26%	not available
20	Nashua (Crown St.)	City of Nashua					243	not available	
21	Nashua 7E	NHDOT					50	34%	
22	Nashua 8	NHDOT					377	84%	
23	New Hampton	NHDOT					111	36%	
24	New London	NHDOT					132	88%	
25	Northwood	Town of Northwood					39	21%	not available
26	Plaistow	NHDOT					275	15%	
27	Portsmouth (PTC)	NHDOT					1248	98%	
28	Portsmouth (Rt. 33)	City of Portsmouth					50	24%	not available
29	Rochester	NHDOT					200	34%	
30	Salem	NHDOT					476	72%	
31	Tilton	NHDOT					63	16%	
32	Warner	NHDOT					23	57%	
33	Windham	NHDOT					140	27%	

## 2.1 | AMENITIES AND IMPROVEMENTS

Amenities at park-and-ride facilities, such as bus shelters and lighting, provide benefits to park-and-ride users. The sections below summarize the presence of amenities at NHDOT lots and include:

- Lighting
- Bus Shelters and Transit Service
- Pavement Markings
- Surface Condition
- Bicycle Amenities

Additionally, this section considers what improvements are necessary to meet ADA requirements.

### **Lighting**

Lighting increases the safety at park-and-ride facilities as well as the perception of safety. It can also make using the lot more pleasant and easier to navigate. Lighting should be installed at all new park-and-ride facilities, and lighting guidelines should follow the 2004 AASHTO *Park-and-Ride Guide*. **All existing New Hampshire Park-and-Ride facilities have lighting.**

### **Bus Shelters and Transit Service**

Shelters make lots more comfortable, but generally do not increase park-and-ride usage. They require maintenance and cleaning so as not to become an eyesore. Figure 2 illustrates the location of park-and-ride facilities with transit service, and Figure 3 illustrates the location of park-and-ride facilities with shelters. **There are three lots with shelters but no public transit service (Table 2).**

**TABLE 2: PARK-AND-RIDE LOTS WITH A SHELTER AND NO TRANSIT ACCESS**

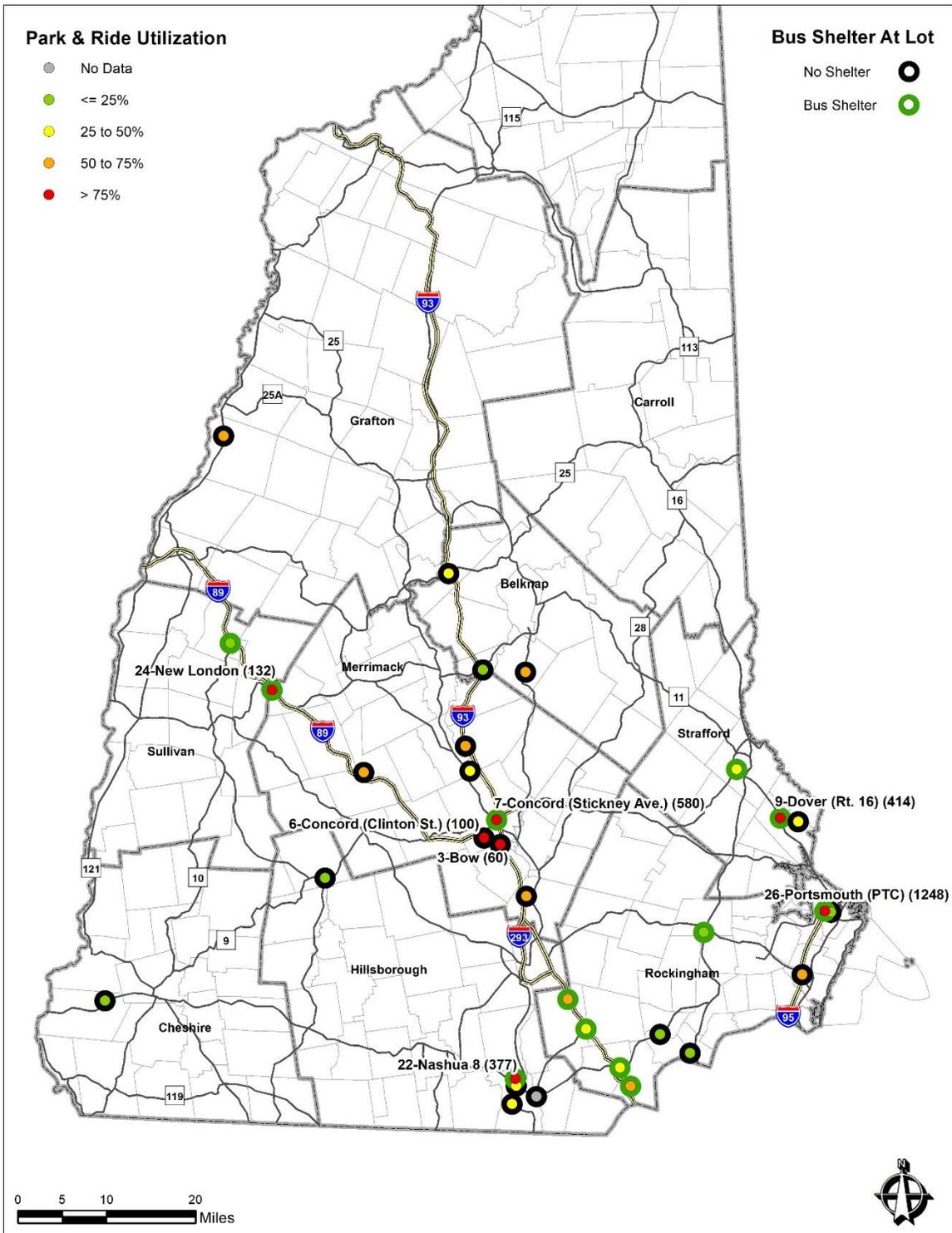
Lot Name	ID	Capacity	Utilization
Epping	10	246	23%
Grantham	11	53	21%
Windham	33	140	27%

NHDOT should include shelters where transit use justifies them. Agencies with policies about bus shelter installation require at least 25 transit boardings per day in rural locations or those with infrequent service. In more urban locations, at least 40 transit boardings per day are required<sup>1</sup>. Transit amenities may be used by other service providers, including schools and recreation departments, and these uses should also be considered. For example, a charter school provides transportation to students at the Epping Park-and-Ride lot. Other important factors include use by passengers with limited mobility, local input and preferences, and any history of potential challenges in the area such as vagrancy, graffiti, or illegal dumping. The State may also want to consider guidelines for decommissioning shelters at locations that do not provide transit access to reduce maintenance costs

<sup>1</sup> These agencies include MetroTransit in the Twin Cities area of Minnesota; TriMet serving the Portland, Oregon area; and WMATA serving the Washington DC Metro area. Policies require between 40 and 50 boardings per day in urban areas, and 25 to 35 boardings per day in more rural areas.



FIGURE 3: PARK-AND-RIDE LOTS WITH BUS SHELTERS





### ***Surface Type, Surface Condition, and Pavement Markings***

All park-and-ride facilities in New Hampshire are paved. **A review of pavement condition at lots suggest most have “good” or “fair” surface conditions.** The State is maintaining pavement conditions at park-and-ride lots. It should continue to monitor lots for pavement problems and repair them as necessary.

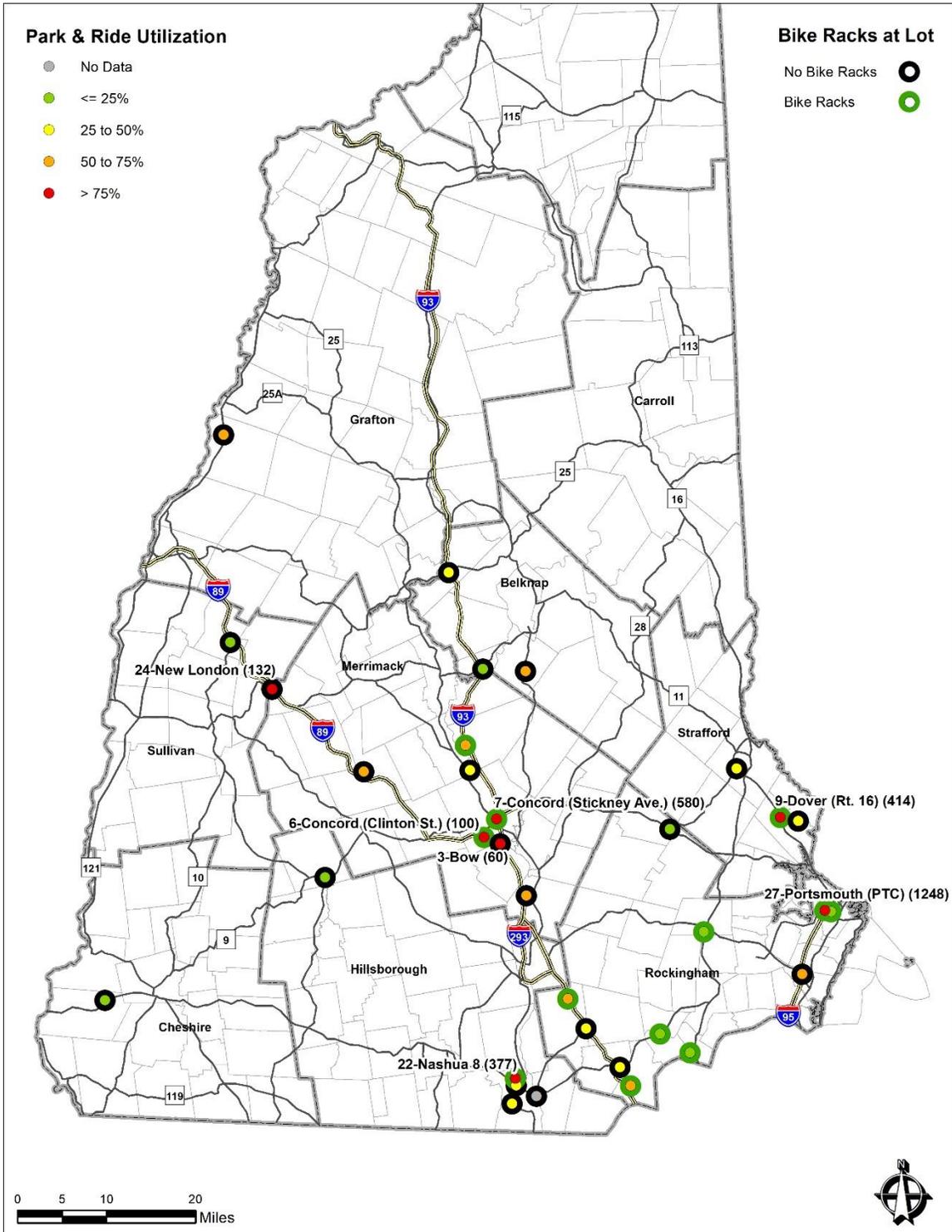
### ***Bicycle Amenities***

All of the park-and-ride lots can be accessed by bicycle, but **only 31 percent of the park-and-ride lots contain bicycle racks** (see Figure 4 for a map of lots with bicycle parking). Bicycle access can provide important extension to the utility of transit services and park-and-ride facilities, especially for those without cars, and bicycle racks are low-cost improvements. Bicycle racks should be prioritized at park-and-ride lots with observed bicycle use, with transit service, with easier bicycle access, or in areas with a higher potential for bicycle-dependence. Bicycle lockers provide additional security for bicycle riders and should be prioritized at park-and-ride lots in close proximity to higher density population centers, those with higher frequency public transit service, and those with lower-stress bicycle access.

### ***Americans with Disabilities Act (ADA) Requirements***

Park-and-ride facilities are public facilities, and therefore NHDOT must make reasonable accommodations to make them navigable for people with disabilities. In 2016, NHDOT completed a study (Americans with Disabilities Act Title II Transition Plan) to identify any improvements required on NHDOT facilities to comply with ADA requirements. This document provided a comprehensive review across all facilities, including the state park-and-ride facilities. **Fourteen of the lots surveyed in the 2016 NHDOT ADA Transition Plan were found to be in compliance with ADA.** Table 3 includes information from the 2016 Transition Plan regarding improvements needed at the noncompliant facilities. Noncompliant lots had missing or noncompliant van parking, larger than acceptable grades, and missing or faded signs or striping. Addressing slopes requires more effort than new striping or signage.

FIGURE 4: PARK-AND-RIDE LOTS WITH BIKE RACKS





**TABLE 3: ADA COMPLIANCE AT PARK-AND-RIDE LOTS (FROM THE 2016 NHDOT AMERICANS WITH DISABILITIES ACT TITLE II TRANSITION PLAN)**

ID	Municipality	Compliance?	Comments	Signs Needed
1	Belmont	not included		
2	Boscawen	No	No wheelchair pavement markings, 2.7% slope, missing sign, sign that was there read "handicapped".	Need (2) R7-8, (1) R7-8a
3	Bow	Yes		
4	Canterbury	No	4% slope.	
5	Chesterfield	No	Missing R7-8a, signs faded.	Need (2) R7-8, (1) R7-8a
6	Concord (Clinton St.)	No	Van access aisle is 64" wide, needs to be 96" wide.	
7	Concord (Stickney Ave.)	No	Needs signage at each space, van access aisle is 84" wide, needs to be 96" wide.	Need (8) R7-8, (2) R7-8a
8	Dover (Ice Arena)	not included		
9	Dover (Rt 16)	Yes		
10	Epping	No	Needs another van accessible space, markings and signs faded. No posted bus schedule.	Need (8) R7-8, (2) R7-8a
11	Grantham	Yes		
12	Hampstead	No	3% slope. Unknown spaces due to faded paint. One extra can sign. "Handicapped" verbiage.	
13	Hampton	No	Van access aisle is 87" wide, needs to be 96" wide.	
14	Hillsborough	Yes	3% slope in some areas	
15	Hooksett	No	No striping or signs.	
16	Londonderry (north)	Yes		
17	Londonderry (south)	Yes		

ID	Municipality	Compliance?	Comments	Signs Needed
18	Lyme	Yes		Need (1) R7-8a
19	Nashua 5W	not included		
20	Nashua (Crown St.)	Yes		
21	Nashua 7E	Yes	"Handicapped" verbiage. Signs partially knocked over, one unreadable, blocked by leaves and trash.	
22	Nashua 8	Yes	If cars pull too far forward access aisle can be blocked. "Handicapped" verbiage.	
23	New Hampton	Yes		
24	New London	Yes		
25	Northwood	not included		
26	Plaistow	No	Phone is 6" too high. Disused bus stop has tree blocking entrance.	
27	Portsmouth (PTC)	Yes	Overflow lot missing 2 van signs, terminal missing 2 van signs, side of terminal missing 3 van signs	
28	Portsmouth (Rt. 33)	not included		
29	Rochester	Yes	Two glass panels broken on shelter.	
30	Salem	No	Van access aisle is 69" wide, needs to be 96" wide.	
31	Tilton	Yes	Could not count total spaces due to faded striping. Signs faded.	
32	Warner	No	3% slope in a few areas.	Need (1) R7-8a
33	Windham	yes		



## 3.0 CURRENT CAPACITY AND FUTURE NEEDS

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### 3.1 | CURRENT USE

While parking lots in general are typically considered overcapacity at 85 percent utilization, research suggests users will avoid park-and-ride lots around 70 to 80 percent utilization.<sup>2</sup> This lower threshold at park-and-ride lots is due to the need to find parking within a time constraint (in the case of boarding a transit service) or to know a carpool partner can find a necessary spot at a designated meeting time. For these reasons, this study uses 75 percent as the threshold park-and-ride utilization. A lot whose utilization is over 75 percent is considered over-utilized.

Park-and-ride locations are meeting points for carpools and vanpools as well as access points for transit. To justify the time cost of interrupting a commute with a stop at a park-and-ride facility, either to meet another commuter or to wait for and board a bus, personal savings in time or money must be realized. For some, this can mean avoiding parking costs or the hassle of parking at their employment location, for others this can mean avoiding the cost of fuel used on their commute, and for others this can mean gaining productive time by being a passenger. As such, park-and-ride lots tend to serve those with longer commutes or making long-distance trips. Consistent with that tendency, the literature indicates park-and-ride lots are ideally situated at least 10 miles from the primary activity center to justify the cost of changing modes<sup>3</sup>. The literature also suggests at least 50 percent of riders live within 5 miles of a park-and-ride facility and about 85 to 90 percent live within 10 miles<sup>4</sup>.

Proximity of a park-and-ride facility to major travel corridors can affect its use as increased visibility improves lots' safety and encourages drivers to use the lots. Studies support this, suggesting park-and-ride facilities should be within a visible distance of major travel corridors, which can include freeways, highways, or major arterials<sup>5</sup>. Reviewing the existing park-and-ride locations in New Hampshire and their utilization rates, over-utilized lots tend to be along or upstream from interstate highways or turnpikes, and under-utilized lots tend to be far from them. Figure 5 shows park-and-ride utilization rates with the 7 over-utilized lots labeled. These over-utilized lots are all along major roadways.

Once someone gets on a limited access road, they are less likely to get off it to carpool or board transit<sup>6</sup>. Thus, capturing potential parkers before they enter highways maximizes lot use. Ideally, park-and-ride lots are placed at access points to the highway system, so commuters can be “captured” before beginning the longer distance portion of their trip.

In examining the conditions of the existing facilities, a theme emerges that park-and-ride utilization is correlated to the presence of transit service. Seven existing facilities are over-utilized, and 5 of those

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<sup>2</sup> Community Transit Long Range Transit Plan – Appendix V. 2010 stated that users will begin to avoid lots if utilization rates are above 70% or 80%.

<sup>3</sup> Holguín-Veras, Jose, et. al. 2012. “New York City Park and Ride Study.” Rensselaer University Research Center.

<sup>4</sup> *Ibid.*

<sup>5</sup> American Association of State Highway and Transportation Officials. 2004. *Guide for Park-and-Ride Facilities*.

<sup>6</sup> Overcoming the delay and psychological barrier of getting off a limited access road to carpool or use transit does occur, especially when the remaining trip distance is long or the parking fees at the destination are high.

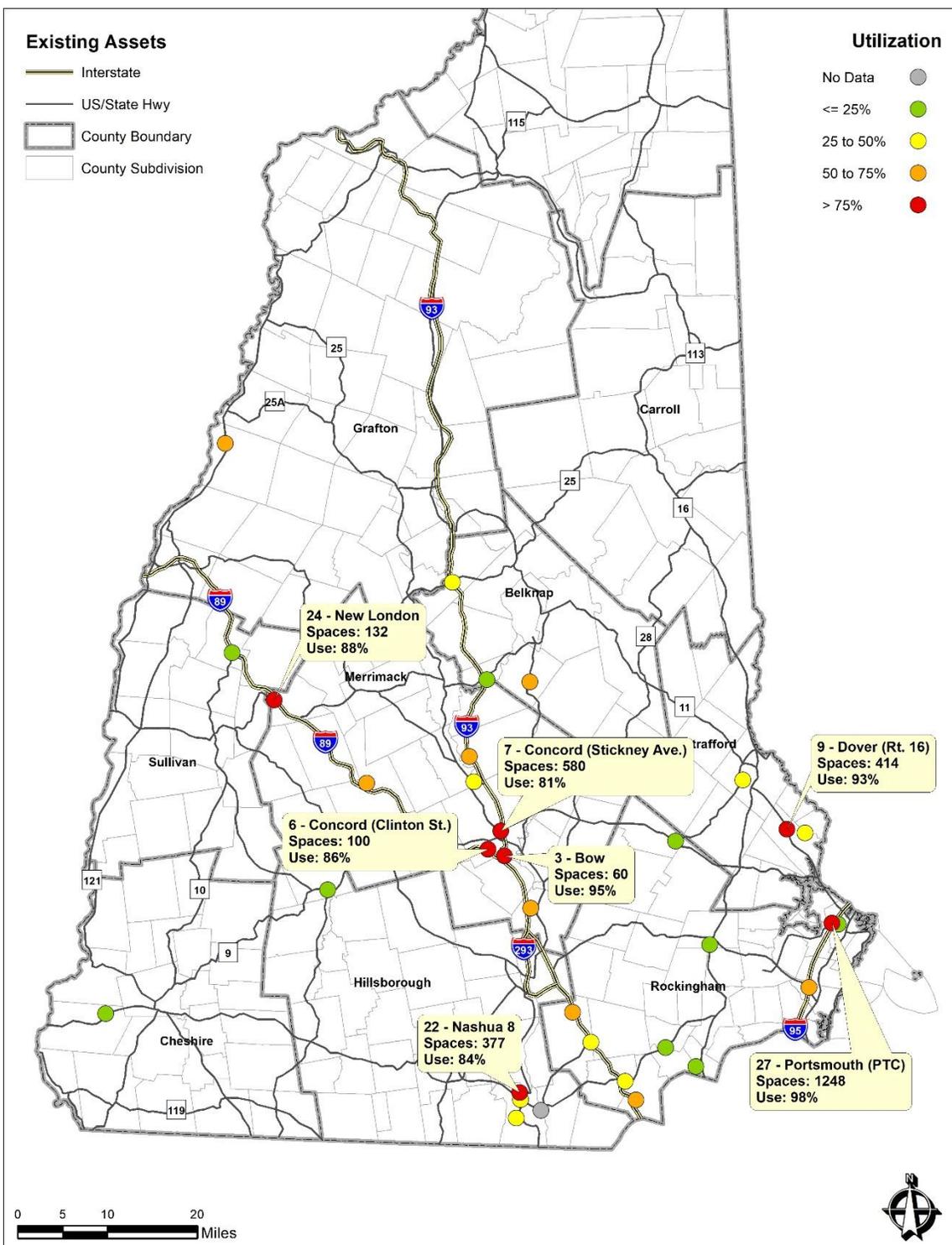
have transit service. Of the 15 that have occupancy rates above 50 percent, 7 have transit service. Table 4 illustrates the relationship between utilization and the presence of transit service at park-and-ride lots.

**TABLE 4: UTILIZATION AND TRANSIT ACCESS AT PARK-AND-RIDE FACILITIES**

Utilization Rate	Total in Category	Number with transit	Local Transit	Intercity Transit	Percent with Transit
No Data	1	0	0	0	0%
≤ 25%	9	0	0	0	0%
25 to 50%	8	3	2	1	38%
50 to 75%	8	2	0	2	25%
≥ 75%	7	5	4	5	71%



FIGURE 5: OVER-UTILIZED PARK-AND-RIDE LOTS



## 3.2 | ADDITIONAL CAPACITY

Park-and-ride lots currently cover most of the state, so current park-and-ride usage largely approximates demand. Therefore, this study focuses on the capacity needs at existing over-utilized park-and-ride lots and areas that are not currently served. Other situations may warrant construction of a park-and-ride facility, such as when lots are required as part of environmental mitigation related to a highway construction project. Those lots are also important to the overall transportation system but are developed outside of the processes covered in this document.

### ADDRESSING DEMAND

#### *Determining Additional Capacity Needed at Existing Lots*

Over-utilized park-and-ride lots are well located and familiar to the people who use them. Many already have transit service. For these reasons, expanding the existing lots where possible is recommended before building new lots. Expanding existing lots avoids the need to add new stops on transit routes, which can make routes less efficient and schedules harder to maintain. This strategy may also reduce maintenance costs since these costs are driven by the number of lots more than the number of spaces in individual lots.

Expanding existing lots may not always be feasible. Existing park-and-ride lots may not have adequate available land to build the needed capacity, or nearby intersections may not be able to accommodate additional traffic. In such cases, NHDOT will need to find alternative locations for additional park-and-ride capacity. When an existing over-utilized park-and-ride lot cannot be expanded, the State should look for new park-and-ride locations within the catchment area of the over-utilized lot. Ideally, this new lot should be located near the intersection of major roads, within five to ten miles of major residential areas, have transit access, and be visible from major roads. Park-and-ride facilities will be most effective if they are between a higher-density residential area and a major road.

For lots where expansion is feasible, NHDOT should increase capacity to meet current and future demand. While an expansion of any size will ameliorate over-utilization, due to the effort and investment required to complete an expansion, capacity increases should aim to expand the lots so they would be less than 60 to 70 percent full under normal use conditions. Aiming for a 65 percent occupancy under current use would allow for future growth and enable the lot to address current unmet need. Table 5 shows the number of spots that would be needed at each over-utilized lot to bring it down to a 65 percent utilization level. As shown, significant amounts of parking would be required to address all existing overcapacity demand through construction. While this approach may be appropriate at the smaller lots, alternative approaches should also be considered at the larger lots, especially given the large amount of parking required and the high cost of constructing parking.

Not including soft costs, land acquisition, or special site work, surface lots cost between \$5,000 and \$10,000 to build per space, and basic garages cost between \$15,000 and \$25,000 to build per space. Building below ground, adding special features, or building on a challenging site can raise the price of garage construction upwards of \$35,000 per space. Using the median of these costs to develop planning estimates indicates meeting the demand through lot expansion would cost on the order of



10 to 25 million dollars. Table 5 includes the estimated cost to expand each lot to the recommended capacity, using median per space construction costs.

**TABLE 5: ADDITIONAL SPACES RECOMMENDED AT OVER-UTILIZED LOTS AND ESTIMATED COST TO BUILD ADDITIONAL CAPACITY**

Lot	ID	County	Current Utilization	Additional Spaces	Median Cost (Surface)	Median Cost (Garage)
<b>Bow</b>	3	Merrimack	95%	28	\$210,000	\$532,000
<b>Concord (Clinton St.)</b>	6	Merrimack	86%	33	\$247,500	\$627,000
<b>Concord (Stickney Ave)</b>	7	Merrimack	81%	143	\$1,072,500	\$2,717,000
<b>Dover (Route 16)</b>	9	Strafford	93%	179	\$1,342,500	\$3,401,000
<b>Nashua 8</b>	22	Hillsborough	84%	111	\$832,500	\$2,109,000
<b>New London</b>	24	Merrimack	88%	47	\$352,500	\$893,000
<b>Portsmouth (PTC)</b>	27	Rockingham	98%	634	\$4,755,000	\$12,046,000

***Recommended Locations for Alternative Management Options***

Expanding capacity can address need for many park-and-ride lots. However, alternative management options should also be considered for larger over-utilized lots and lots in locations where alternatives strategies would be more likely to succeed.

**Locations with Contracted Operators**

Of the 8 over-utilized park-and-ride lots, four are notably large – 7:Concord Stickney Ave (580 spaces), 22:Nashua 8 (377 spaces), 27:Portsmouth PTC (1248 spaces), and 9:Dover Rt. 16 (414 spaces) – and are managed by contracted operators who provide bus service and staffing and operation of the terminals at the locations. C & J Bus Lines runs intercity transit service from 9:Dover Rt. 16 and 27:Portsmouth PTC to Boston and New York City. Concord Coach manages the terminal at 7:Concord Stickney Ave from which it provides service to Boston and New York City. Boston Express manages and operates 22:Nashua 8, 17:Londonderry (south), 16:Londonderry (north), and 29:Salem and provides service to Boston from these locations. Concord Coach stops at 22:Nashua 8 on its way to New York City. Parking is free at all of these locations, though C & J Bus Lines offers valet service to its lease lots off site at Dover Rt. 16 and Portsmouth PTC for a flat fee of \$7. Dartmouth Coach has management responsibilities at the 24:New London lot and provides service to Boston and from the Upper Valley from this location.

These facilities are similar to the privately-owned and operated terminal maintained by Dartmouth Coach in Lebanon. Dartmouth Coach outgrew its terminal on Old Etna Road and opened a new facility on Labombard Road in 2016. This location has a new terminal building and 400 parking

spaces, and Dartmouth Coach charges \$4 per day for parking. Anecdotally, the users of the parking lot are not limited to those riding Dartmouth Coach, and the lot is also serving park-and-ride demand. Despite charging for parking, Dartmouth Coach is looking to expand its parking capacity and is working to acquire and develop a proximate location for 250-300 additional parking spaces<sup>7</sup>.

The contracted operators at NHDOT park-and-ride facilities can be considered successes by many measures: they are well utilized and connected to robust transit services. The contract arrangements achieve various transportation goals. However, the constraints of the current agreements are limiting the success of these locations. The contracts are not long enough for the contracted operators to finance improvements. Free parking limits the operators' ability to manage demand and expand parking and transit service. NHDOT should evaluate the potential to charge for parking at these locations and evaluate the risks and benefits to the state of long-term lease agreements. The state should also continue to support the local transit services that serve these locations.

### **Long-Distance Commuter Counties**

While approximately 85 percent of the workers in New Hampshire work in state<sup>8</sup>, two counties in the southern portion of the state (Hillsborough and Rockingham) send many workers to Massachusetts (Figure 6). This large commuter population contributes to different park-and-ride and transit use characteristics than the rest of the state. Due to the dense land use development that has already occurred in these counties along key roadways and the large number of additional spaces that would be required to meet demand, expansion of existing lots or identification of suitable new ones may be challenging. Further, due to the longer travel distances typically involved in commuting out of state, workers may be more incentivized to use alternative modes and more willing to pay for parking. Paying for parking can fund expansion and can manage demand. Over-utilization of park-and-ride lots in these counties should be addressed through a combination of capacity expansion, parking fees, and local transit feeder service.

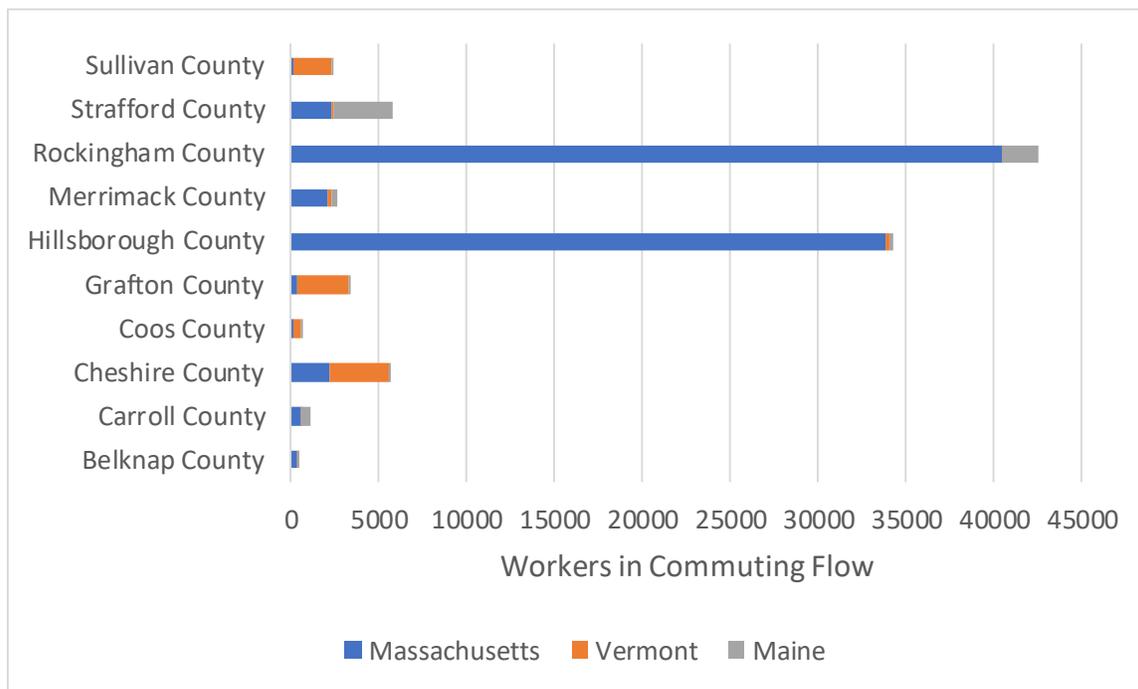
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<sup>7</sup> <http://www.vnews.com/Dartmouth-Coach-Buys-Elks-Property-Proposed-New-Building-16749473>

<sup>8</sup> Source: 2009-2013 5-Year American Community Survey Commuting Flows, Table 1. County to County Commuting Flows for the United States and Puerto Rico: 2009-2013 ; <https://www.census.gov/data/tables/time-series/demo/commuting/commuting-flows.html>



**FIGURE 6: NEIGHBORING WORK STATE FOR NEW HAMPSHIRE WORKERS, BY COUNTY (SOURCE: AMERICAN COMMUNITY SURVEY JOURNEY TO WORK COMMUTE FLOWS)**



### ***Locating and Sizing New Lots in Underserved Areas***

In addition to expanding lots that are over utilized, some parts of the state are not currently served by a park-and-ride lot. New park-and-ride lots in these areas may be appropriate. Research indicates most park-and-ride users will live within 10 miles of the lot, and they use lots along their existing route to work. As shown in Figure 7, several high residential density areas in the State are more than 10 miles to a park-and-ride: Littleton (I-93), Berlin (NH 110/NH16), the area around North Conway, Claremont (NH 120/NH 103/NH 11), the Upper Valley<sup>9</sup> (NH 120/US 4), Moultonborough (NH 25), Ossipee (NH 16/NH 25), and Wolfeboro (NH 28/NH 109). These locations should be prioritized for evaluation for new lots as funding becomes available.

Other locations identified by local and regional representatives should also be evaluated for state funding, but they may not have many of the characteristics associated with robust park-and-ride use. As such, they may be best served by a locally-owned park-and-ride facility, which are often smaller and centrally located. These are sometimes shared facilities with churches or municipal buildings. These smaller or shared lots are better matches when demand is likely to be lower to avoid unnecessary land consumption and the creation of management challenges.

Estimating the appropriate size for each of these new lots without a detailed analysis of each location is difficult. As proximity to residential density is one factor for a successful park and ride, the underserved areas are divided into two groups for preliminary planning based on their residential densities. Based on the lot sizes of existing park-and-rides, the lots proximate to the highest

<sup>9</sup> While the Upper Valley does not have an official state park-and-ride facility, the Dartmouth Coach bus terminal includes a large parking lot, open to the public. This lot is well utilized, despite a daily fee.

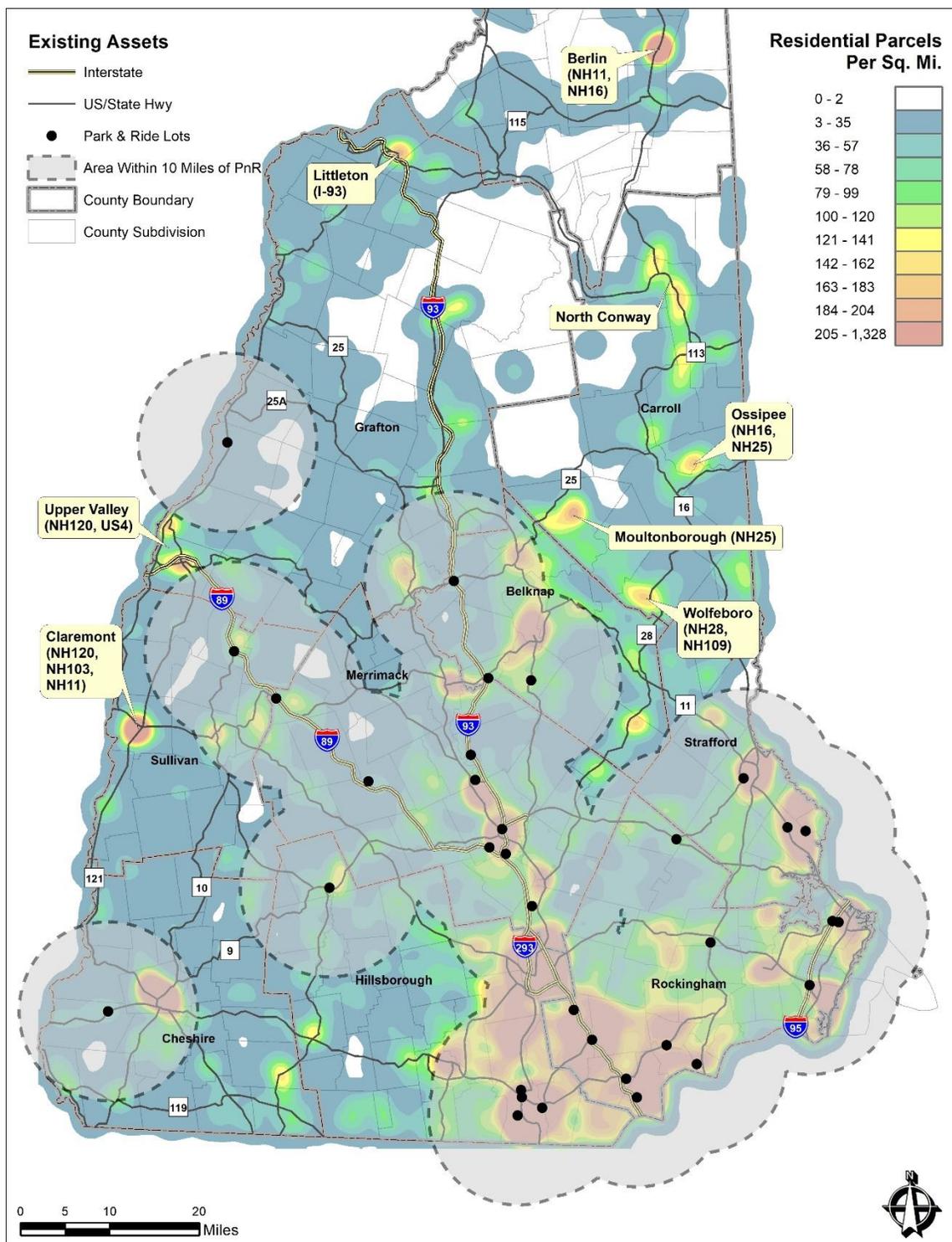
residential densities would be planned as medium-sized lots, roughly 50 spaces. These locations include Littleton, Berlin, Claremont, and the Upper Valley. At this time, small lots (~20 spaces) are anticipated for the other prioritized locations, including North Conway, Moultonborough, Ossipee, and Wolfeboro. Specific site conditions including the availability of suitable land, the specific location of that land, and the ability to coordinate with local and long-distance transit service will affect the sizing. Using the average cost per space of surface lot construction, the medium-sized lots would cost approximately \$400,000 to develop. The small lots would cost approximately \$160,000 to develop.

These locations are general recommendations about areas of unmet need and do not include recommendations for specific site locations. NHDOT would need to perform additional analysis to determine the best site for the park-and-ride lots within these areas. Determining the specific location for lots relies on insight into the predominant direction of travel. The maps in Appendix A illustrate the proportion of New Hampshire workers from each county traveling to other counties in the state. Staff should consider the criteria in Table 6 as well as comments from RPC and local officials.

Of the areas identified through the spatial analysis as locations consistent with successful park-and-ride usage, Littleton, Berlin, the Upper Valley, and Ossipee/West Ossipee were identified in outreach conversations with the RPCs throughout the state as locations of unmet demand. A summary of those conversations is provided in Appendix B.



FIGURE 7: AREAS OF NEW HAMPSHIRE NOT SERVED BY A PARK-AND-RIDE LOT



### ***Integrating with Intercity Transit Service***

An important component of transit service in New Hampshire is the Intercity Bus Program, which serves to link rural areas to urban areas with regularly scheduled service open to the public. An evaluation of the Intercity Bus Program has identified four routes to be continued or initiated to serve demand in the state. These routes include:

- Continuing service: Littleton to Concord
- Continuing service: Berlin/North Conway/Concord (either or both of two segments)
- New service: Laconia to Concord
- New service: Keene to Nashua

While existing park-and-ride facilities with bus terminals exist in Concord and Nashua, having clearly identified arrival and departure locations for the terminus points and other key locations for these routes is important to their success. As such, new park-and-ride facilities with transit amenities would be needed to support the existing and proposed Intercity Bus services. The locations with Intercity service proposed without existing facilities include:

- Littleton
- Berlin
- Keene
- Peterborough
- Laconia

These locations are included in the capacity investment prioritization. Specific facility locations have not been identified as part of this process, but their locations should be consistent with park-and-ride facility success: they should be located downstream of population density, proximate to major roadways and commute routes. Their locations should be chosen to minimize travel time for the intercity routes. Coordination with intercity providers and, when present, local transit providers is important to ensure they can serve the proposed locations.

### ***Prioritizing Capacity Investments***

After reviewing the literature around park-and-ride utilization<sup>2-5</sup>, the following criteria are recommended to evaluate capacity investments:

- Proximate residential density
- Utilization levels
- Proximity to major roadways
- Transit presence and frequency of service
- Location along commuter route
- Site availability

Specific projects are prioritized by assigning points to each of these categories in a way that upholds policy decisions. For underserved areas, the location should receive 5 points in the utilization category. Transit proximity refers to distance to a local, fixed route or distance to an existing intercity bus stop or to support a new intercity service. Preliminary point allocations are shown in Table 6 and



can be refined to align with policy goals. The project with the largest number of points should be the highest priority.

**TABLE 6: PROPOSED METHODOLOGY PRIORITIZING CAPACITY INVESTMENTS**

Points	Max Utilization (existing lots)	Residential Density (max w/in 2 mi)	Major Roadway Proximity	Transit/ Intercity Proximity	Commute Route Location	Site Feasibility
0	0-50%	<50	None	None	Upstream of travel flow	Multiple barriers
1	50-75%	100-200	Within 1 mile of State highway	Within 1 mile	Center of residential density	
2		200-400	Within 0.25 mi of State highway	Within 0.5 mi	Downstream of residential density, along state highway	State or muni owned, physical/ environmental constraints
3		>400	On State highway	Within 0.25 mi	At junction of State highways	
4			Visible from Ramp	Within 0.25 mi/ 15 min service	At Interstate interchange	
5	>75%		Visible from Interstate	On existing route	At junction of Interstates	State/Muni owned, no physical/ environmental constraints

The existing over-utilized park-and-ride lots, the areas of unmet need, and the locations identified to support intercity service were evaluated using a version of the prioritization methodology recommended in Table 6. As specific projects are not currently being evaluated, the site feasibility measure cannot be considered. The other measures were evaluated. Further, as specific locations have not been identified for the areas of unmet need, optimal locations with regards to the criteria were identified in each area. These locations are not necessarily constructible, and once specific potential sites are identified they should be evaluated.

Using Littleton as an example demonstrates how the scores are developed. As an area of identified unmet need, it receives 5 points for the utilization category. With a maximum residential density between 100 and 200 residences per square mile, it receives 1 point for the residential density category. As Littleton has been identified as a potential terminus of intercity transit service, Littleton

receives 5 points for proximity to transit. Because it is an area of unmet need, a park-and-ride facility in Littleton does not have a specific location. The scores for the remaining categories assume the best scores the area can achieve. With a major interstate passing through, the recommended location for a park-and-ride facility in Littleton would be proximate to the ramps, and 4 points are assigned for roadway proximity. Littleton receives 4 points for the commute route category, as a lot could be located proximate to the interstate. As potential buildable sites are identified, they should be evaluated against these criteria.

Table 7 summarizes the results of the analysis and includes a prioritized ranking of potential projects.

**TABLE 7: PRIORITIZED FUTURE FACILITY NEEDS**

ID	Municipality	Utilization	Residential density	Roadway Proximity	Transit Proximity	Commute Route	Total
7	Concord (Stickney Ave.)	5	3	5	5	5	23
26	Portsmouth (PTC)	5	3	4	5	5	22
22	Nashua 8	5	2	4	5	4	20
9	Dover (Rt. 16)	5	2	3	5	4	19
24	New London	5	1	4	5	4	19
	Berlin	5	3	3	5	3	19
	Littleton	5	1	4	5	4	19
	Keene	5	3	3	5	3	19
	Upper Valley	5	2	4	3	4	18
	Laconia	5	3	3	5	2	18
	Claremont	5	2	3	4	3	17
3	Bow	5	2	4	0	5	16
6	Concord (Clinton St.)	5	3	4	0	4	16
	Peterborough	5	1	3	5	2	16
	Ossipee	5	1	3	2	3	14
	Moultonborough	5	1	3	2	3	14
	North Conway	5	1	3	2	2	13
	Wolfeboro	5	1	3	0	3	12



### ***Maintenance Costs and Responsibilities***

Constructing park-and-ride facilities is one component of a park-and-ride system. Operating and maintaining them must also be planned for. Agencies differ in their structures for maintenance and operations, and few keep detailed records that track the costs of maintaining and operating park-and-ride facilities separately.

Most agencies have responsibilities for at least some of the park-and-ride facilities in their systems, and these are typically managed by district garages. In these cases, several factors contribute to the cost of operating and maintaining the facilities. The distance from the district garage and the location of the lot relative to other district facilities contributes significantly. If a lot, for example, is on a plowing route, it can be maintained at a lower cost than one requiring a dedicated trip, especially if that trip is long. The physical layout of the lot will also factor into the cost, as a lot that can be maintained by the same equipment used for other proximate facilities will have lower costs than those requiring special equipment and its associated dedicated trip. Other factors such as the nature of the landscaping can contribute to costs. While a larger lot will require some additional time to maintain than a smaller lot with all the same design characteristics and location, in practice the other factors contribute more to the overall cost. As such, those maintaining the lots should be consulted on any proposed new lot or lot expansion to minimize unnecessary maintenance costs. The best available information suggests annual operating and maintenance costs of approximately \$25,000 to \$50,000 on average per lot.

Agencies have other methods for managing their park-and-ride facilities. In some cases, they are leased to transit operators, who may take on specific maintenance and operation responsibilities. In these relationships, the specific roles must be outlined clearly, and expectations for service quality should be articulated. In other cases, agencies develop public-private partnerships with other lot owners, ranging from houses of worship to retail establishments. Those contracts can involve the agencies taking on maintenance of private facilities or the agencies lease the space and the private owner provides maintenance. Relationships with municipalities can have a similar structure. Sometimes private developers include park-and-ride capacity in their projects as a component of their mitigation. In these cases, the state can take on management or those responsibilities can remain with the project owner.

### **3.3 | ONGOING MONITORING**

The evaluations provided in this analysis are based on the best available data. Utilization is calculated based on the maximum count at each lot. In some cases, count data has been collected one time while other locations have been counted more frequently. Weather or seasonal events may also be influencing the counts. Different count data could lead to the conclusion that more or less than the identified 1177 additional spaces are needed.

To ensure reliable, actionable data, NHDOT should maintain its systematic count program, especially at lots that are over-utilized or nearly so. The count program should be consistent across lots and from year to year. The counts should be recorded in a standardized template and should note:

- Weekday
- Time of day
- Weather
- Number of vehicles parked
- Number of vehicles parked in accessible spaces (if applicable)
- Number of bicycles parked
- Presence of trash and/or vandalism

While counting the vehicles in the lots, the counter should also take inventory of the condition of the lot. Issues to note should include:

- Lighting availability
- Burnt out lightbulbs
- Shelter availability
- Shelter condition (if applicable)
- Pavement/Surface condition
- Noticeable problems (potholes, etc.)
- Walkway conditions (if applicable)

NHDOT should also consider enlisting District staff to perform counts and inventory deficiencies. By using a simplified checklist, the District staff would be able to quickly record the needed information, and the operations staff will be able to quickly enter it into a database. A more efficient option would be to have the District staff enter count data directly to the count database with a smart phone or tablet, but that method will require more setup. While the literature suggests typical catchment areas and behaviors of park-and-ride users, periodic user surveys would better define the users' characteristics and distribution.



## 4.0 SUMMARY OF FINDINGS

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This study has investigated existing conditions of the New Hampshire park-and-ride system. It has inventoried existing amenities and calculated utilization rates. It has also explored areas where the park-and-ride system will need additional capacity and alternate strategies to address these needs.

### 4.1 | INVENTORY

As part of this effort, the presence of amenities at New Hampshire park-and-ride lots have been reviewed. All New Hampshire park-and-ride lots have lighting and acceptable pavement condition; ten lots have transit service. Four lots have shelters but no transit service. NHDOT should include shelters where transit or other use justifies them, typically between 25 and 40 boardings per day. The State may also want to consider guidelines for decommissioning shelters at locations that do not provide transit access to reduce maintenance costs and limit potential management concerns.

Only 41 percent have dedicated bicycle parking, which is a low-cost improvement that can increase access to carpooling and transit.

Fourteen of the park-and-ride lots surveyed in the 2016 Americans with Disabilities Act Title II Transition Plan were in compliance with ADA requirements. Those that were not had missing or noncompliant van parking, larger than acceptable grades, and missing or faded signs or striping. Table 3 includes information from the 2016 Transition Plan regarding improvements needed at the noncompliant facilities.

### 4.2 | CAPACITY NEEDS

Based on the available literature, a threshold of 75 percent utilization is used for this study to determine over-utilized conditions. Eight lots are over-utilized, and four where contracted operators are in place should be evaluated in detail for either expansion or alternative management strategies, including pricing and continued investment in local transit feeder services. These strategies should be developed in conjunction with a review of the contracted operators' agreements. Lots in Rockingham and Hillsborough counties should also be evaluated for their suitability for different management strategies, including pricing and increased local transit service, in addition to expansion. Table 5 illustrates the number of new spaces recommended at each over-utilized lot to address over-utilization strictly through construction. The estimated cost of addressing these needs through surface and garage parking is also included.

A number of underserved areas have been addressed that have high residential density, proximity to major roadways, and are more than 10 miles from the nearest park-and-ride facility. These include Littleton (I-93), Berlin (NH 110/NH16), the area around North Conway, Claremont (NH 120/NH 103/NH 11), the Upper Valley (NH 120/US 4), Moultonborough (NH 25), Ossipee (NH 16/NH 25), and Wolfeboro (NH 28/NH 109). These locations should be prioritized for evaluation for new lots as funding becomes available. Five locations have been identified that would serve as terminus locations for intercity transit service. Two of them (Littleton and Berlin) have also identified as areas of unmet need. The other three (Keene, Peterborough, and Laconia) have been added to the prioritization effort. These locations should be developed in conjunction with intercity transit service.

Any other proposed locations to serve an area of unmet need should also be evaluated. Those that do not score highly through the prioritization method would be better served by a municipally-owned park-and-ride facility.

For preliminary planning, medium-size lots of about 50 spaces, which are estimated to cost approximately \$400,000 to construct, are recommended for four of locations of unmet need (Littleton, Berlin, Claremont, and the Upper Valley). Small lots of approximately 25 spaces are recommended for the remaining four areas of unmet need (North Conway, Moultonborough, Ossipee, and Wolfeboro). The small lots are estimated to cost approximately \$200,000 to construct. The sizes of park-and-ride facilities constructed to support intercity transit should reflect analysis of probable ridership and associated parking demand.

As funds are available for new lots, they should be prioritized in accordance with the features the literature suggests are factors in park-and-ride utilization: locations between a residential hotspot and commute destination on the upstream side, close to a major roadway, and with presence of transit service. In addition, the ease of development should also be considered. Table 6 illustrates a proposed prioritization method based on the findings from the literature. Table 7 illustrates the prioritization method for over-utilized lots and areas of unmet need.

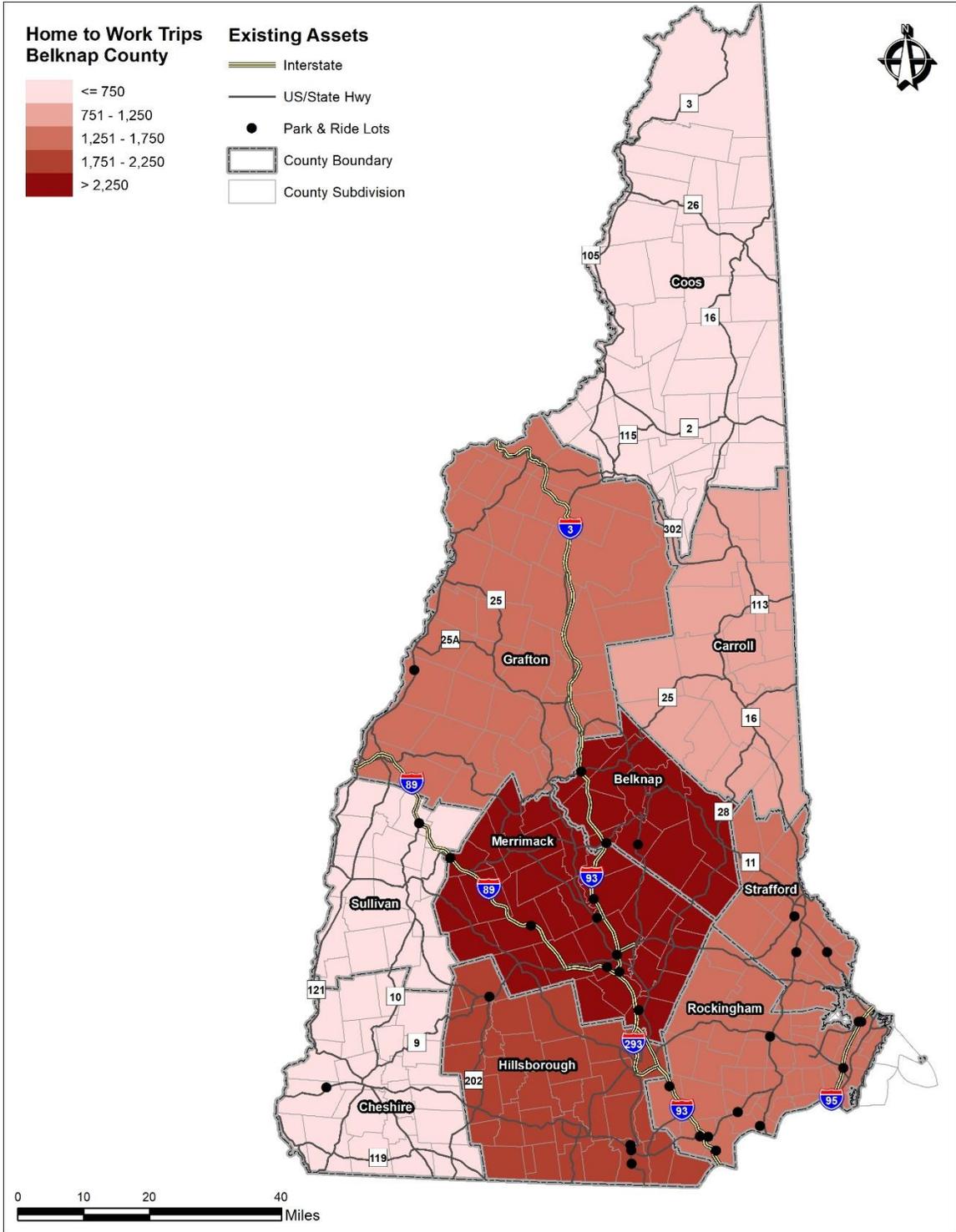


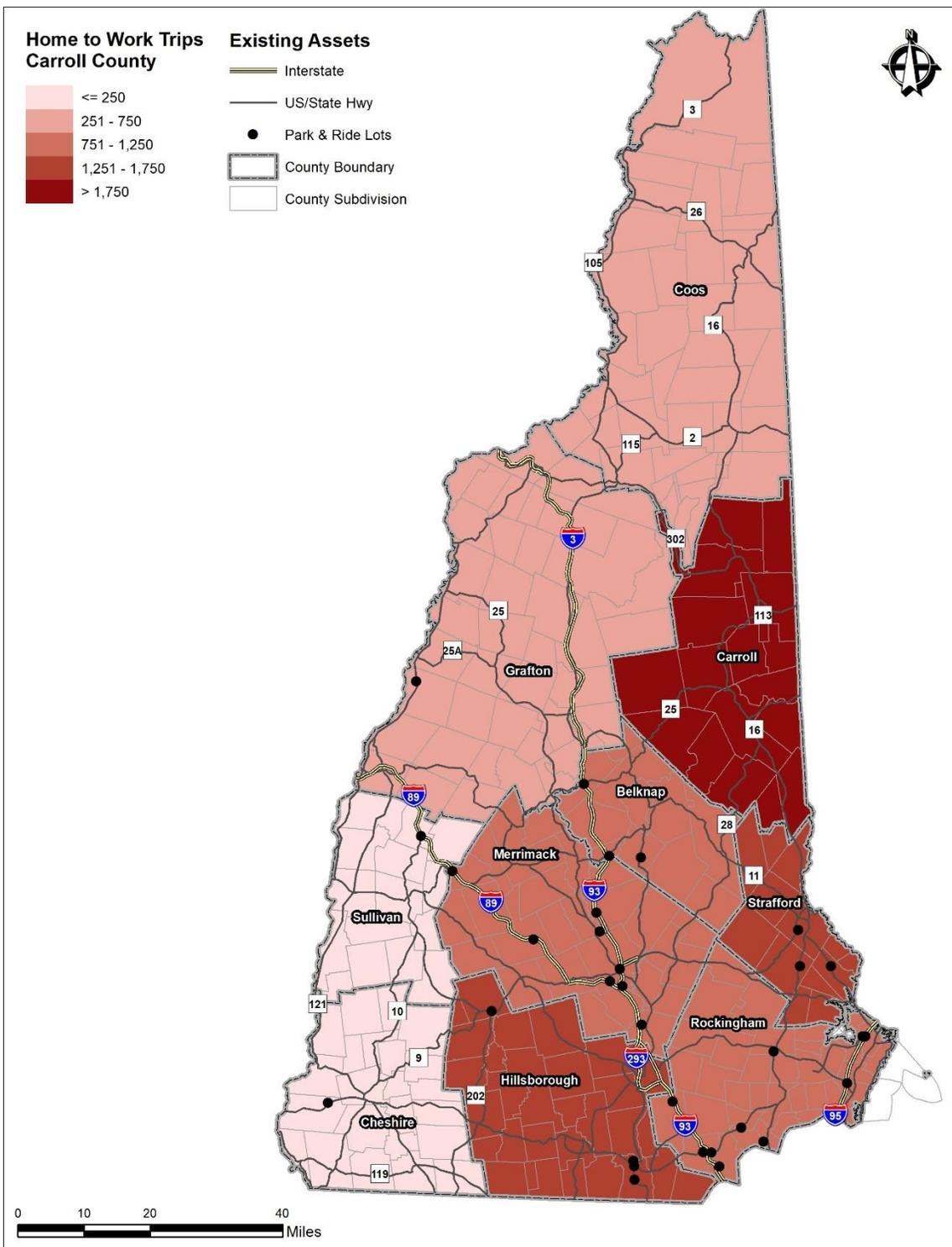
## APPENDIX A. WORK COUNTY FOR NEW HAMPSHIRE WORKERS, BY COUNTY<sup>10</sup>

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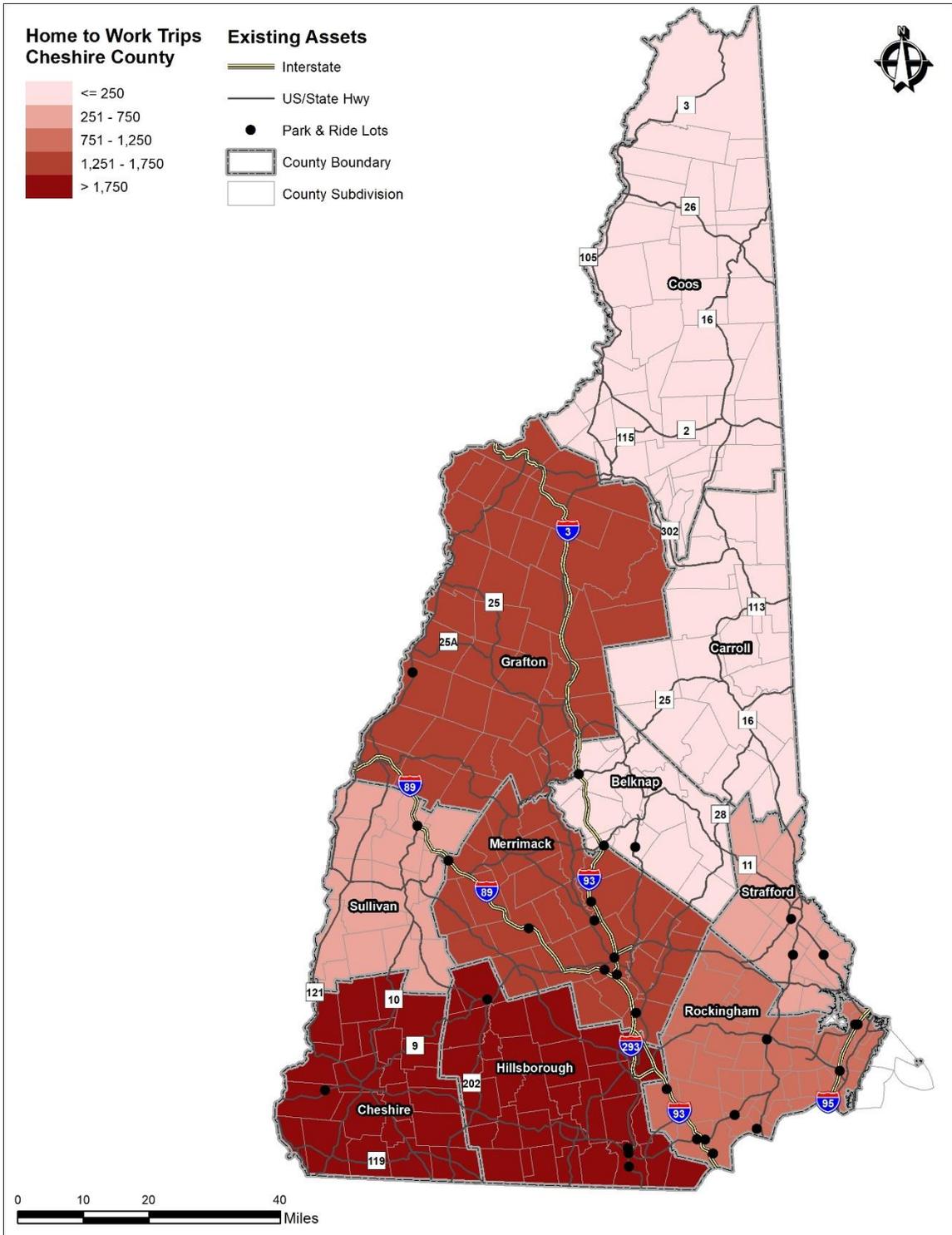
<sup>10</sup> Source: LEHD Origin-Destination Employment Statistics, aggregated by county  
<https://lehd.ces.census.gov/data/#lodes>

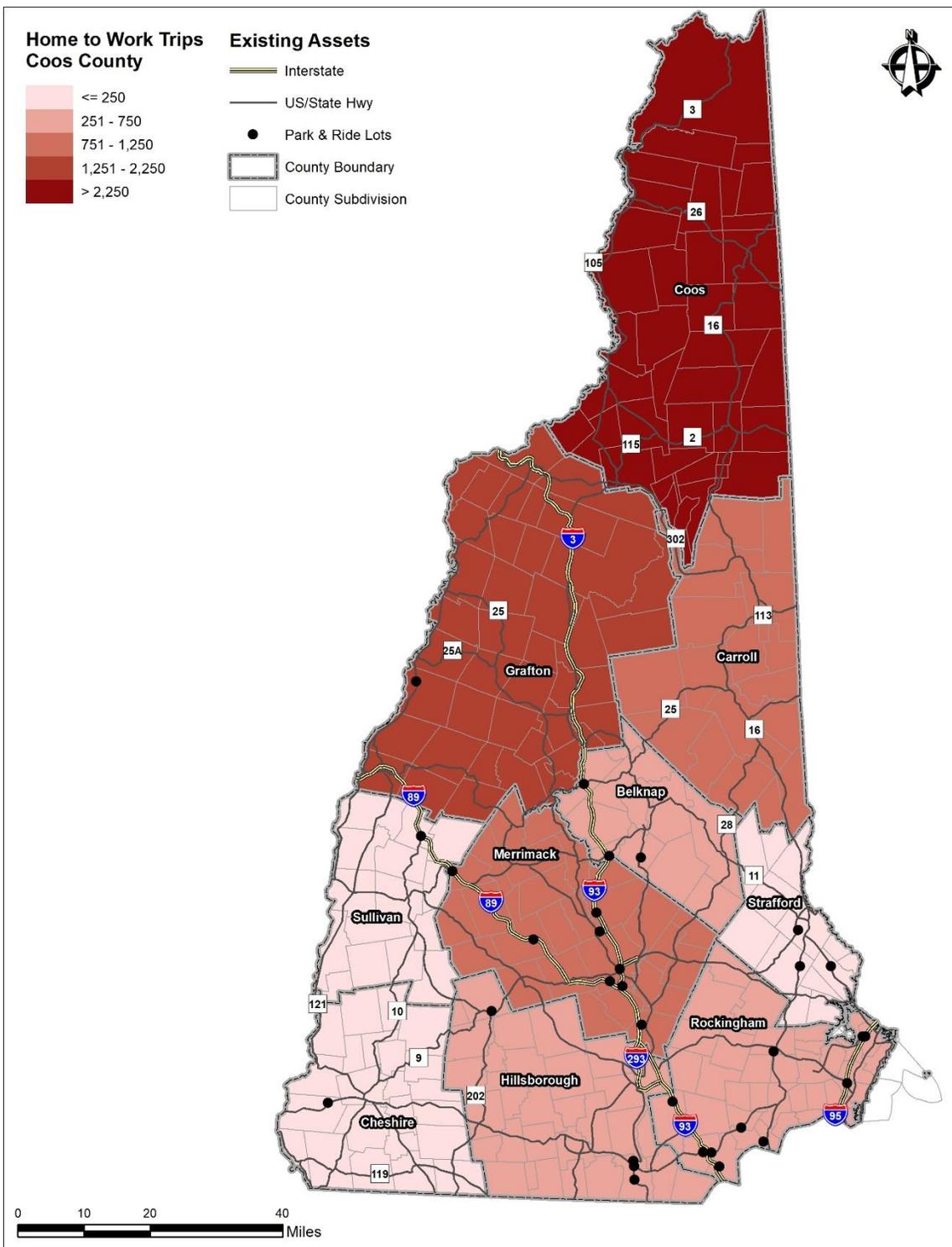
New Hampshire Department of Transportation  
 Statewide Strategic Transit Plan: Park-and-Ride Facilities



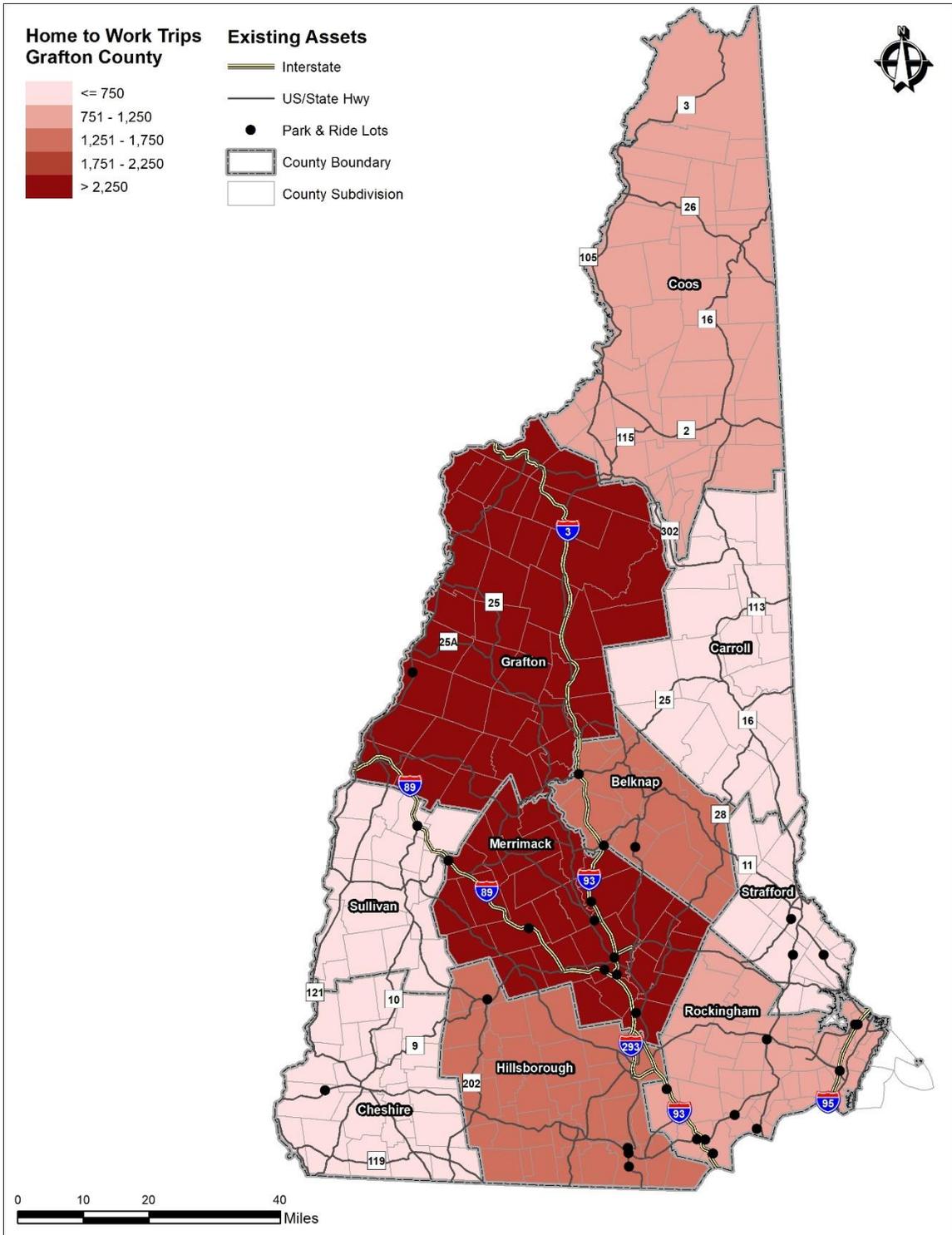


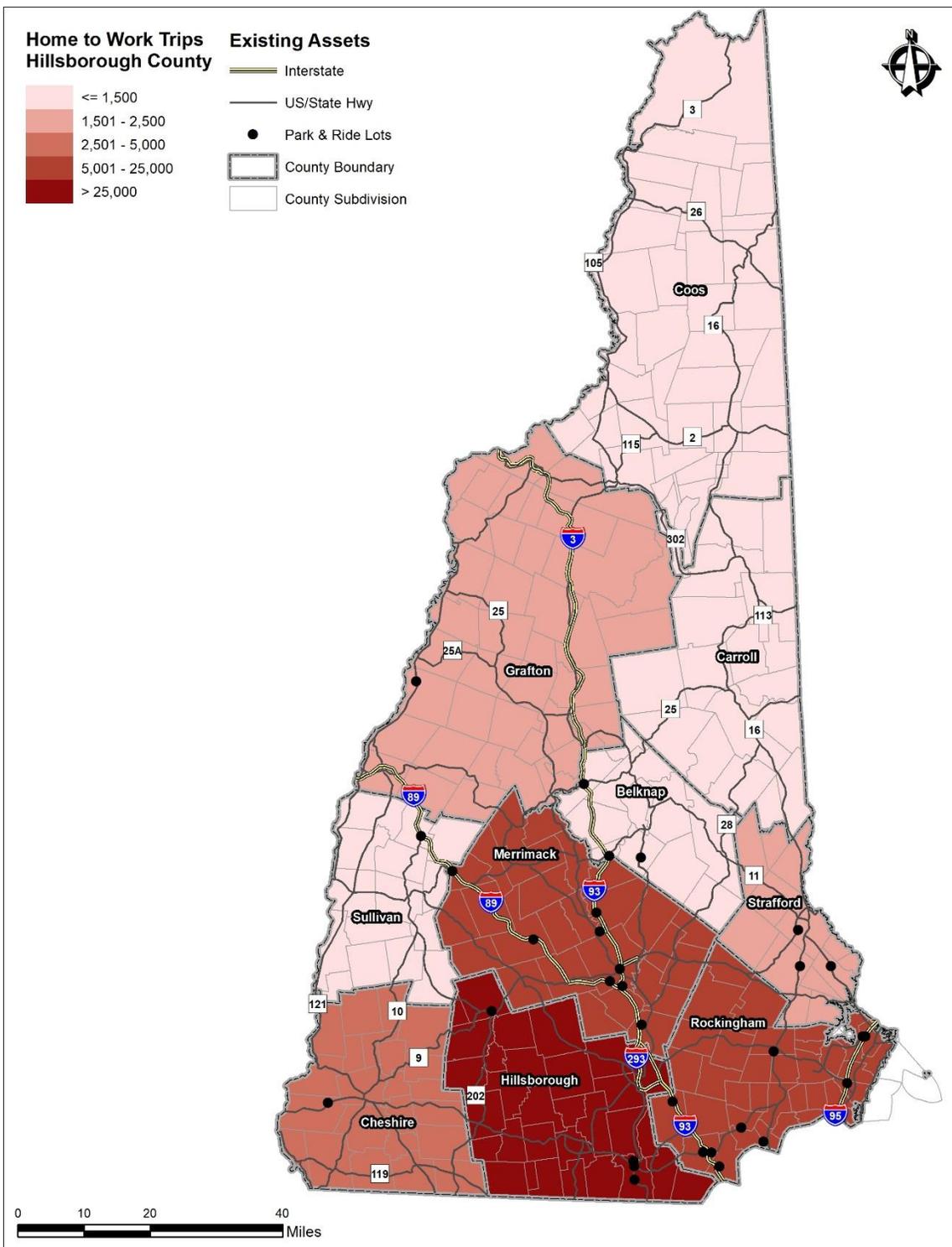
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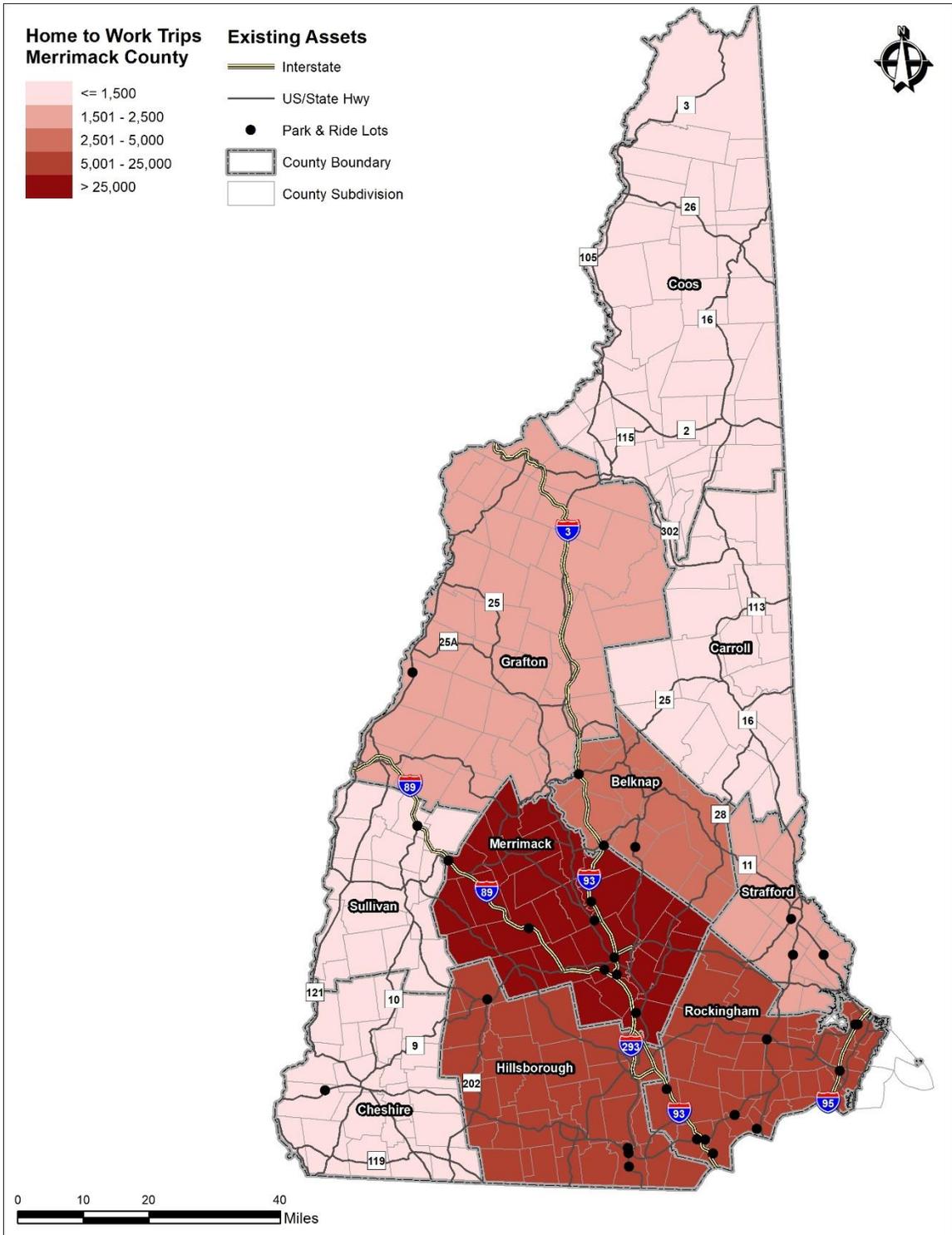


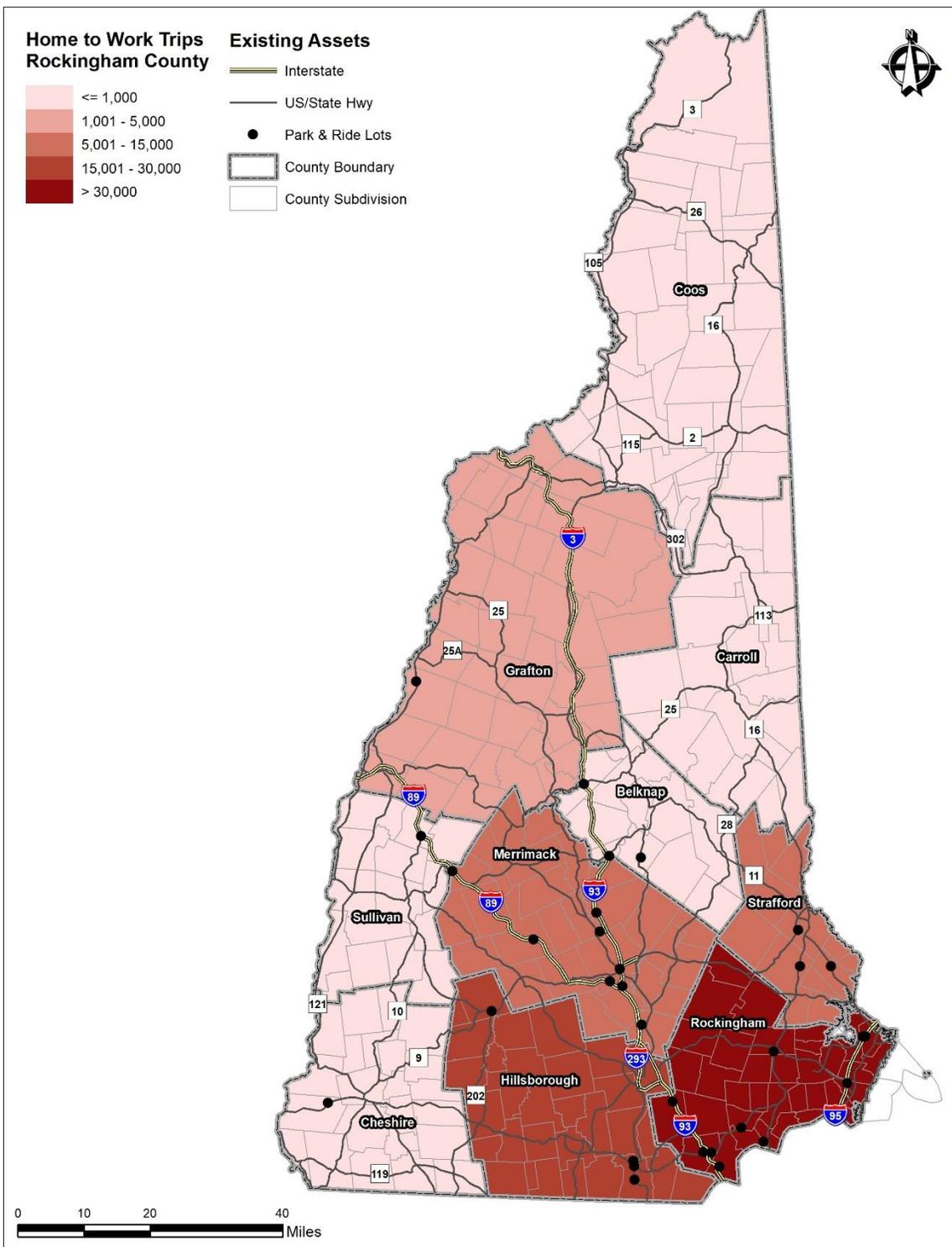
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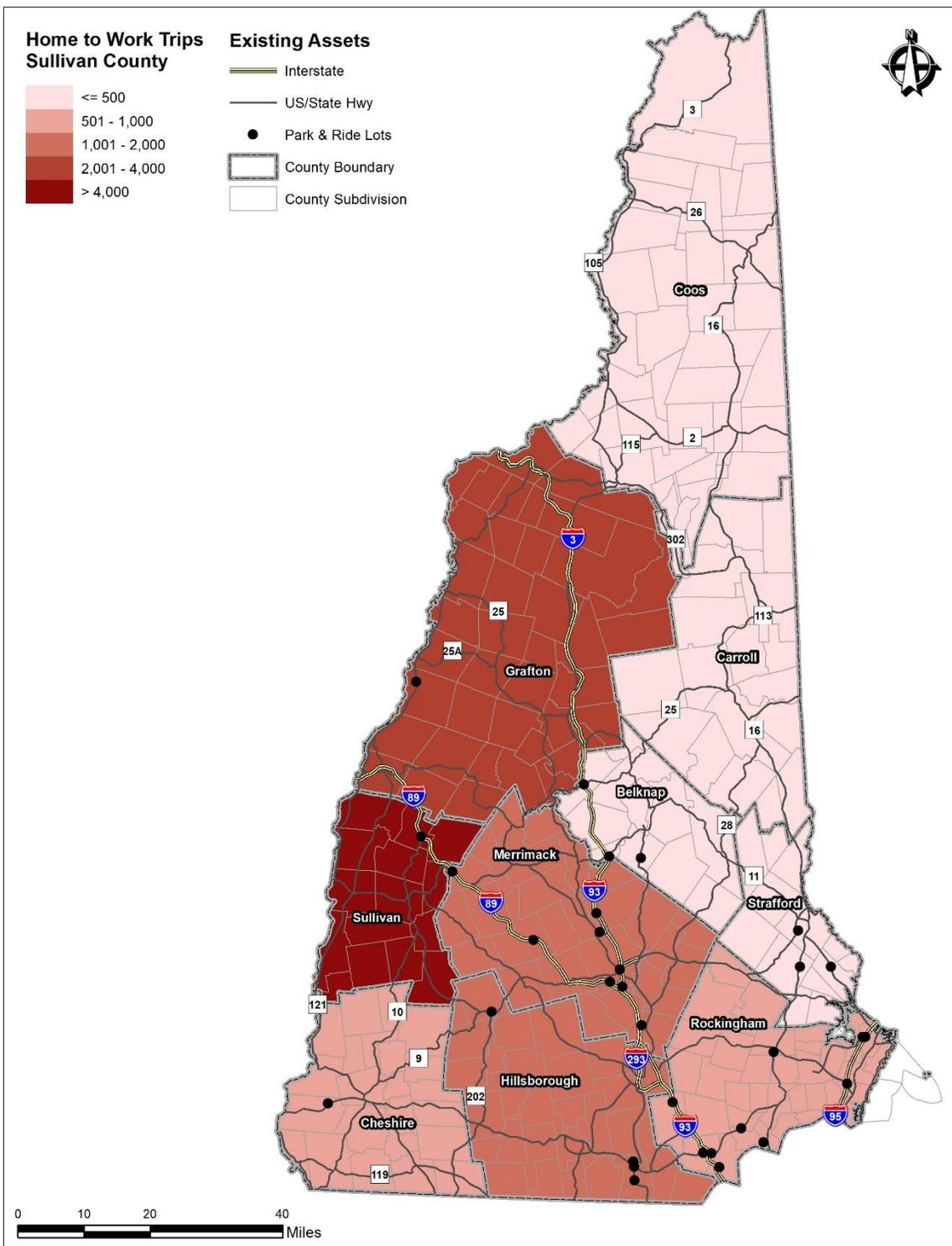


New Hampshire Department of Transportation  
 Statewide Strategic Transit Plan: Park-and-Ride Facilities













## APPENDIX B. SUMMARY OF NOTES FROM OUTREACH WITH THE REGIONAL PLANNING COMMISSIONS

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### NCC

- Location in Plymouth invites people to park (paid) with 24-hour meters
- Littleton is doing a parking study/some talk of a P&R perhaps create terminal for Concord Coach (CC now stops at a gas station in Littleton) – Brenda thinks this is the best opportunity
- Parking congestion at PSU in Plymouth
- Berlin and Gorham have a lot of summer traffic for ATV riders; trails

### UVLSRPC

- Exit 17 (different parcel); there was a proposed lot at Exit 17 but Lebanon said no
- Exit 16 – money was in the DOT budget to develop a property police chief in Enfield didn't like it – costs for policing it. Took money for developing Exit 13 instead. There's an unofficial lot at exit 16 used by legislators
- Exit 13 now at capacity
- New London lot is maxed out
- Intermodal study from 2010: <https://lebanonnh.gov/DocumentCenter/Home/View/909>

### RPC

- Exeter train station – capacity constraint
- Portsmouth transportation center (used as a remote airport parking lot for Logan); free parking there; used by locals during winter ban; study of pricing ongoing; Jim Jalbert talking about P3 there to charge for parking
- New P&R in Hampton, Route 1 and 101 for intercity - a stop for IC service on I-95, a stop between Portsmouth and Newburyport; COAST fixed route down Route 1, not cost effective because of local match; Hampton selectmen decided they didn't want a P&R in downtown (bus fumes); not much land at I-95/101 interchange. C&J looking at P&R at exit 57 in Newburyport

### LRPC

- West Ossipee (unofficial McDonalds parking lot)
- Town of Warner
- 16/28
- 28/140/11 (Alton)
- Meredith has public lot behind Aubuchon

### SNHRPC

- Unmet needs
  - Exit 3 P&R as connection point between NTS and I-93 corridor
- Potential locations

- Manchester satellite lots.
  - PnR for transit into town. Mill Buildings parking. Private company PnR off highway, trolley system;
  - Coordinate off exits with community college
  - Queen City/Elm, realistic location, limited passenger rail
- Derry very popular area, Windham Boston Express

### SRPC

- Unmet needs
  - Land use issues about P&R lots using land at primary sites (33&I-95)
  - What is the purpose of the lots, for commuters? For airline passengers?
- Potential locations
  - Lee traffic circle; which leg of the intersection? But transit service ending in May
  - 108 South of Durham to serve route 5
  - Route 4 in Northwood (small) at US 202
  - Route 2, 3, 101 deal with Care Pharmacy/CVS in Dover near exit 8
  - Something in Somersworth along High Street
  - New Durham Route 11, some unofficial spots used by ATVs and snowmobilers, see a need for a future P&R there
    - COAST route 6 has no logical terminus; a P&R would be a good terminal
  - Issue of free parking at all of the park & ride lots
  - On route to shipyard, could be in Maine to relieve pressure: Berwick, Somersworth
  - Exeter PnR capacity, lots at rail overcapacity, alternatives
  - Fox Run Mall (informal)
  - Newmarket library

### CNHRPC

- Unmet needs
  - Keene to Concord/Manchester
  - Hillsborough – informal one at the Shaws, more use than official one
  - Henniker 202-127 intersection Old Concord Road informal PnR lot behind Dunkin Donuts
  - Expanding Bow P&R
  - 129 & 106 informal PnR
- Potential locations
  - Pittsfield, was going to be developed, 107/28 (not developed yet) using CMAQ funds
  - Exit 18 in Canterbury (10 spots)
  - Epsom traffic circle, informal parking at Care pharmacy, open asphalt, but no obvious bus terminal



- No good options in Chichester
- Old rest area Northwood town border, former rest area goes to surplus
- Informal PnR at Sullys (28 & 3 in Pembroke)
- Tilton PnR underused, informal at McDonalds, Outlets

## SWRPC

- Unmet needs
  - Only 1 location in region, Chesterfield Rt 9 @ state park Gorge, no intercity bus service
  - Greyhound passes by it Keene → Brattleboro
  - 10-hour limit at Transportation Center, no long-term parking to support intercity bus
- Potential locations
  - was interest in Peterborough; tried to establish a P&R there; owner of plaza not interested
  - Access point at intersection of Rt 9 and I-89 P&R and/or transit service.
  - Reviewed in PnR toolkit
    - On Keene Bypass System (ideally intercity bus & local)
    - Peterborough 202 & 101, got funds to develop
  - Looked at community center
  - Not in region but something in Hopkinton Rt 9 @ 89 would serve the region
  - VT has covered the 91 corridor (Brattleboro, Westminster, Rockingham), what's lacking is to the west.
  - Informal lots
    - 202 & 101 Peterborough plaza, Job Lot
    - Keene so many places they can park
    - Antioch commute in cluster, classes in 2 days
    - Peterborough 202 up to 9, complex Brady's, Dunkin Donuts
    - On bypass 9, 12, 101
    - PnR limited access highway on/off visible
    - large workforce going elsewhere, highest concentration?
    - Around gas station on 9? Hillsborough small